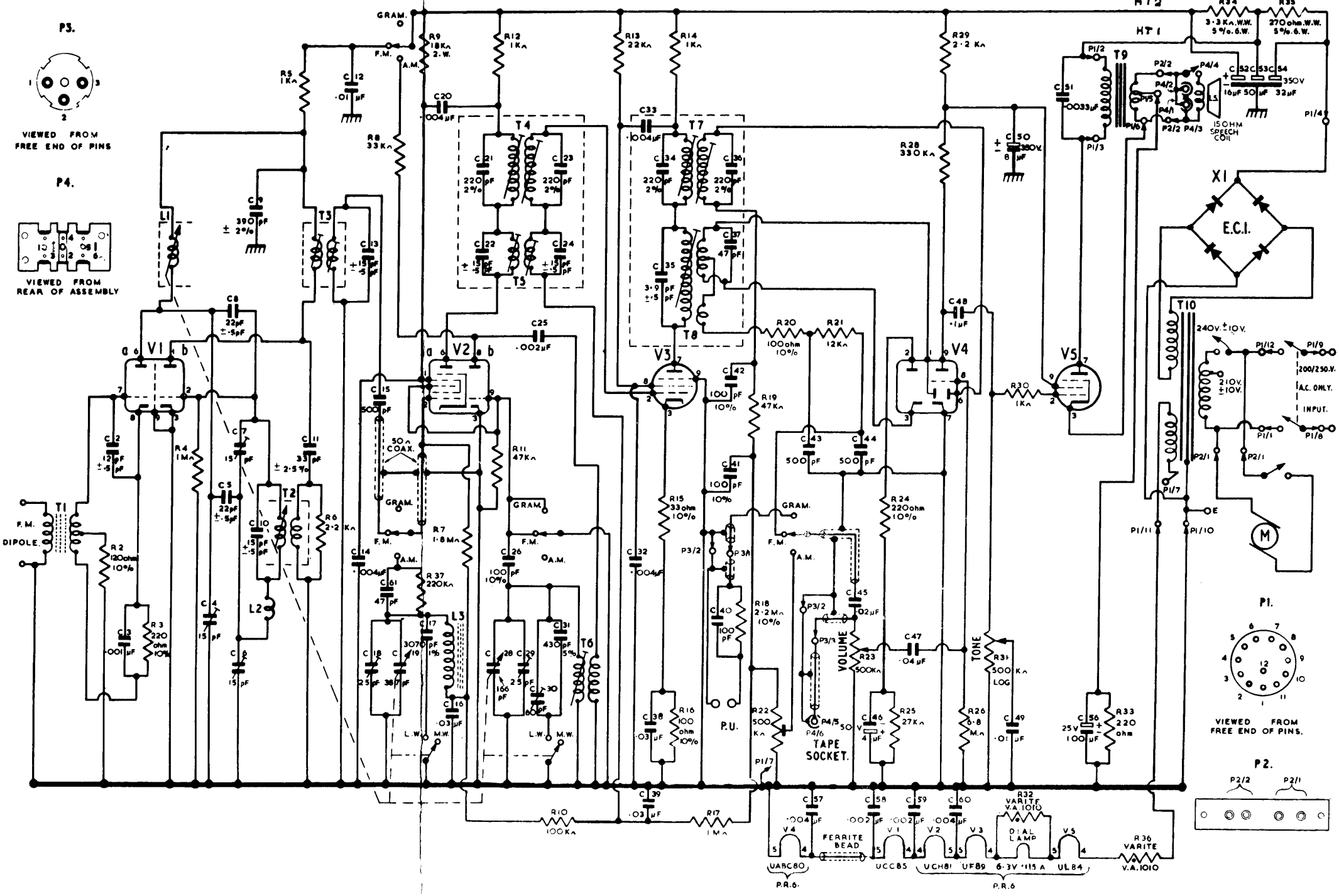
BAIRD. M.286. A.M./F.M. AUTO. RADIOGRAM. CIRCUIT DIAGRAM.



MODEL 286 AM/FM AUTO-RADIOGRAM

Mains	200–250 volts A.C. only.
Wavebands	M.W. 180–550 metres. L.W. Preset at 1500 metres. F.M. 88–100 Mc/s.
Record Changer	B.S.R. Monarch UA–16 or UA–14 4 speeds 16, 33, 45, 78 R.P.M. Loading 10 records, intermixed sizes of same speed.
Pick-Up	B.S.R. TC8H
Controls	4 front controls:-

Below tuning dial – Tuning knob
Above tuning dial – Reading left to right:

1. Wavechange switch with position for GRAM.
2. On-off switch and Volume control for Radio and gram.
3. Tone Control for Radio and gram.

Turning the tuning control to its fully anticlockwise position switches the receiver from Medium Wave to Long Wave Light Programme.

Aerials Built-in	Ferrite rod for M.W. and L.W. rotatable by rear edge control knob. Internal flex aerial for F.M. Socket for external diapole.	
Valves	V1 UCC85	RF.Amp (FM) and osc-mixer (FM).
	V2 UCH81	Osc-mixer (AM): 1st I.F. Amp (FM).
	V3 UF89	I.F. Amp (AM): 2nd I.F. Amp (FM).
	V4 UABC80	Diode detector (AM) Ratio detector (FM) and 1st Audio triode (AM and FM)
	V5 UL84	Audio output amp.
H.T. Rectifier	Westinghouse Bridge E.C.1.	
Socket Facilities	Tape Recorder and External Speaker.	

MECHANICAL DETAILS

To remove the radio chassis or power unit, first remove the wooden panel covering the radio compartment. It is not necessary to remove the power unit if only the radio unit is required, but if both are to be removed then take out the power unit first.

TO REMOVE THE POWER UNIT

Remove the three quick thread screws holding the power unit, two in the bottom ½" square wood batten and one on the underside of the cabinet holding the inner edge of the power unit.

Next lever out the two plugs, one (P1, twelve way) on the top of the power unit and the other (P2, four way) on the inner side of the power unit. Care should be taken not to put excessive strain on these plugs and access to the four way plug is made easier if the power unit is up-ended. The power unit can now be lifted clear.

TO REMOVE THE RADIO CHASSIS

Remove the four control knobs and unscrew the large edge-control knob at the rear which rotates the ferrite aerial. Now detach the wire link from this latter knob and also from the grommet in the ferrite aerial bracket.

Unplug the 3 pin plug (P3) from the socket mounted on the cabinet and unplug the sockets from the FM aerial socket. (There is one socket over another to save unsoldering). Also unplug the 12 way plug (P1) from the power unit if this has not already been done.

There are now two screws to unfasten and the chassis is free. The first screw is between the volume control and wavechange switch at the top of the chassis and the second is under the cabinet coming up into a bracket fastened to the bottom of the chassis. Do not remove the bracket from the chassis.

When the screws are removed the chassis can be withdrawn and lifted clear.

PLUGS AND SOCKETS

The twelve pin plug and socket (P1) between the power unit and the radio unit carries the mains to and from the switch, the HT supply, the heater supply and the connections between the sound output transformer and the output valve.

The four pin strip plug (P2) on the power unit carries mains to the gram motor and the low impedance speaker connections from the output transformer to the speaker.

The three pin plug (P3) from the radio chassis carries tape recorder connections to the tape socket and pick up connections to the gram unit.

The two pin socket on the underside of the cabinet is for connecting the FM aerial and normally has the internal aerial plugged in. If necessary the internal aerial can be unplugged and an external dipole can be connected.

TAPE AND EXTERNAL SPEAKER SOCKETS

There are three phono sockets on the rear of the gram compartment and two of these are wired in parallel for connecting an external speaker. If the external speaker plug is inserted into the centre socket the internal speaker is switched off. In the other socket both speakers will operate.

The tape socket enables a tape recorder to be connected to the output from the detector where it is independant of the volume control and where there is least distortion.

AUTOCHANGER

This can be removed by inserting a finger in turn through each of the two holes on the underside of the cabinet and pushing the spring plate on the end of each transit bolt into a vertical position. The transit bolts must be in the released position before this can be done.

The autochanger will lift out but will be held by the mains and pick up leads and for complete removal these must be unsoldered.

CIRCUIT DESCRIPTION – AM.

The ferrite rod aerial L3 is tuned by C18 and C19 on medium waves (MW) and pre-set by C17 on long waves (LW) to the Light programme. It connects via C61 and the AM/FM /GRAM selector switch to the control grid of the UCH81 pentode mixer (V2a). R7 provides a DC return path for V2a grid.

The oscillator is a parallel fed tuned grid type using the triode section of V2. On MW the grid coil of T6 is tuned by C28 and C29. LW is pre-set by C31 while C30 allows final adjustment for reception of the Light Programme. These latter condensers are switched in by contacts on the tuning gang which operate at the low capacity end.

Oscillator trimming on MW is by C29 and padding is by the core of T6. Aerial trimming is by C18.

The signal and oscillator frequencies are mixed in V2 and the resultant frequency (IF of 470 Kc/s) is developed across T4. V3 (UF89) is the IF amplifier and the amplified signal is passed by T7 to the detector diode in V4 (electrodes 6 and 7 of UABC 80). The detector circuit consists of C42, R19, C41, which form an IF filter and R22 which is the diode load. The slider of R22 is set to match the AM output to the FM output. Audio output from the slider on R22 is fed via the AM/FM switch and C45 to the volume control R23, and from the volume control slider via C47 to the grid of the triode section of V4.

The D.C. voltage developed across R22 is fed as automatic gain control (AGC) to the grid of V3, via R17 smoothed by C39, and to the grid of V2 via R10, R7, smoothed by C16.

CIRCUIT DESCRIPTION – FM.

The signal from the FM aerial is coupled to the grid of the first triode section of V1 (UCC85) by the aerial input transformer T1 which is tuned to mid band and tapped to provide neutralisation.

Amplified signals appear across L1 and C4 in the anode circuit of V1a, and are fed to the self oscillating mixer V1b through a bridge network consisting of C5, C6, C8 and the CgK of V1b. This bridge prevents the oscillator voltage from being fed back into the aerial circuit and is adjusted for balance by C6.

The oscillator is a parallel fed tuned grid type working on the low side of the signal frequency. Permeability tuning of the HF and oscillator coils L1 and T2 is used, the cores of which are ganged together and moved in and out of the coils by a cam arrangement on the AM tuning gang. Coil L2 is in series with T2 primary and together they form the oscillator inductance. Adjustment of L2 and C7 enables the correct frequency coverage to be obtained. The secondary of T2 is the feedback circuit and is fed from V1b anode via C11. R6 stabilises the output over the band. Mixing takes place in V1b and the resultant frequency (IF of 10.7 Mc/s) goes via T3 and the AM/FM switch to the grid of V2a. C11 tunes the primary of T3 while C13 tunes the secondary.

The IF component developed across R5 is fed back to the grid of V1b via L1 and C8 to give positive feedback thus reducing the damping effect of the valve on T3. The amount of feedback is determined by the value of C9 which affects the gain and bandwidth of the tuner. The AM oscillator V2b is switched off on FM and the oscillator grid is earthed to prevent feedback.

On FM V2a acts as an IF amplifier and the signal appearing at its anode is fed via T5 to V3 and via T8 to the ratio detector diodes in V4.

Neutralisation of the UCH81 (V2a) is by C14 and C20 and for the UF89 (V3) by C32 and C33.

The ratio detector circuit comprises T8, C37, R20, C43, R24, C46, R25, and two diodes in V4. (electrodes 1–7 and 2–3). R21 and C44 form an RF filter and audio from their junction passes through the AM/FM switch and C45 to the volume control.

Audio Stages

The triode part of V4 operates as a grid biassed A.F. amplifier, its output being resistance-capacity coupled by C48, R31 and R30 to the control grid of the pentode-output valve V5. R31 and C49 comprise a simple treble-cut tone control. The output stage has approximately 7 dB of negative – voltage feedback applied from anode to cathode to reduce distortion and increase power handling. Cathode bias for V5 is provided by R33 and C56 and a small amount of Tone correction by C51. The anode circuit of V5 is coupled by the output matching transformer (T9) to the loudspeaker speech coil of 15 ohms impedance.

Gram operation

The pick-up (TC8H) is connected to the wavechange selector switch via the frequency correction network C40 and R18.

Power supply

A mains transformer T10 supplies HT and heater currents and the mains is applied via a double pole mains switch on the rear of the volume control. The valve heaters are in series and the Varite R36 limits the switch-on surge. A second Varite R32 is wired in parallel with the pilot lamp and is normally inoperative. R32 operates if the pilot lamp fails, thus keeping the receiver working.

The high tension (HT) voltage from T10 secondary is rectified by a bridge rectifier X1 and smoothed by C54, R35 and C53 for supplying the anode of the sound output stage. Further smoothing by R34 and C52 is used to supply HT to the remaining stages.

All voltages measured relative to chassis and are DC unless otherwise stated. Measurements made with AVO Model 8, 20 K.ohms/Volt. Input 240V A.C. on 240V Tap. No signal input on AM/FM or Gram.

Valve	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9	
UCC85	A2	G2	K2	H	H	A1	G1	K1	S	
	136	–	–	(54VAC	28VAC)	136	.7V	2.2	–	FM
	–	–	–	("	")	–	–	–	–	AM
UCH81	G2.G4	G1	KG5S	H	H	AH	G3	At	Gt	
	82	–.12	–	(54VAC	73VAC)	141	–	–	–	FM
	82	–.2	–	("	")	168	–3.4	75	–	AM
UF89	S	G1	K	H	H	S	A	G2	G3	
	–	–	1.2	(85.6	73VAC)	–	138	95	–	FM
	–	–.5	1.45	(VAC	")	–	161	108	–	AM
UABC80	A3D	A2D	K2D	H	H	A1D	Kt.K3D	Gt	At	
	–.35	–.63	–.35			–	K1DS	–.5	57	FM
	–.35	–.65	–.35	(28VAC	–)	–	–	–.6	60	AM
	–.35	–.65	–.35	("	)	–	–	–.5	61	Gram
UL84	IC	G1	K	H	H	IC	A	IC	G2	
	–	–	10.5	(130.6	85.6)	–	232	–	141	FM
	–	–	12.5	(VAC	VAC)	–	228	–	165	AM
			12.6	(	)	–	228	–	166	Gram

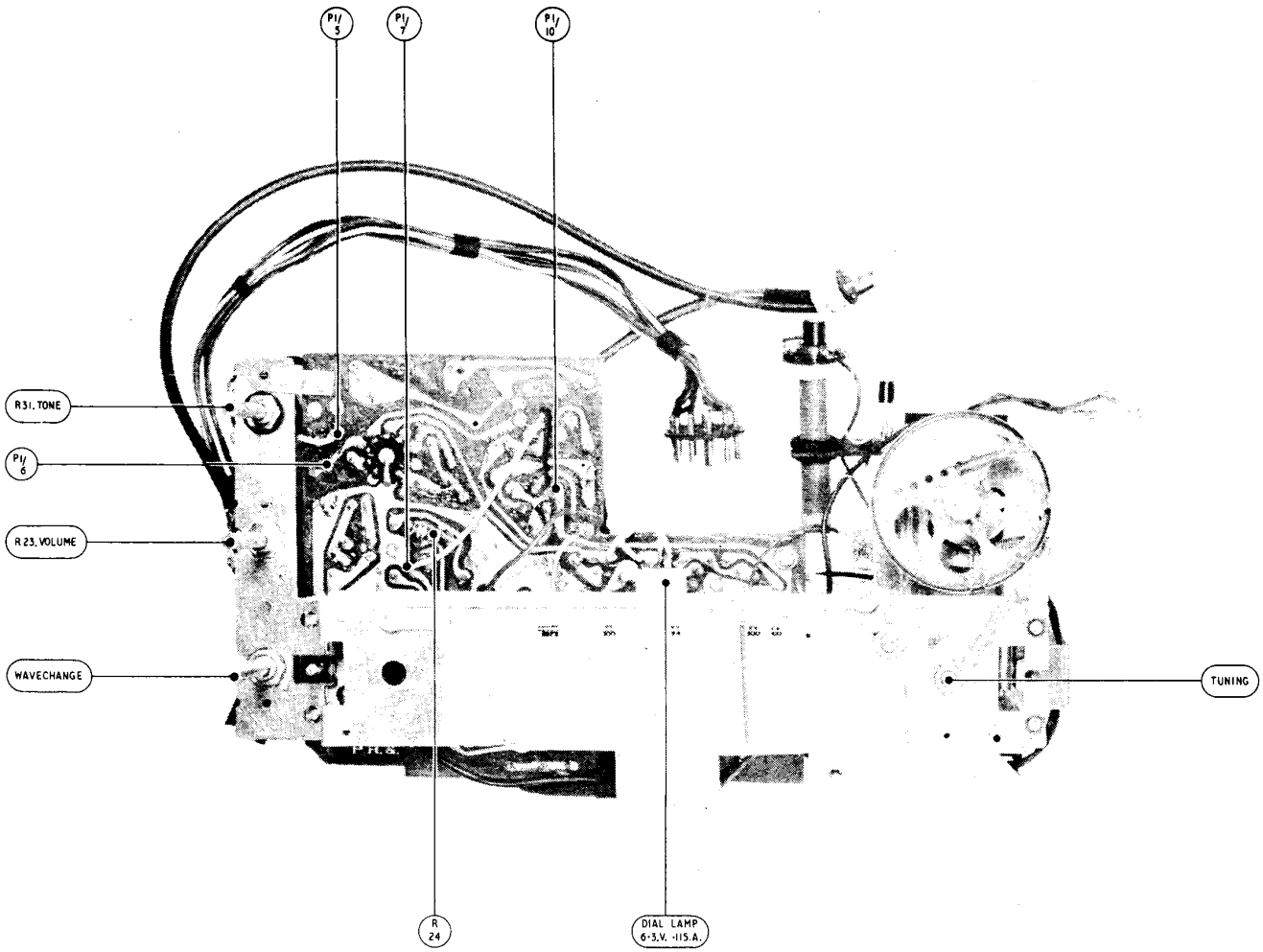
	AM	FM	GRAM	
HT line	274	274	274)	
HT 1	254	254	254)	Volts D.C.
HT 2	165	141	166)	

HT line	80	80	80)	
HT 1	55	47	55)	MA DC
HT 2	25	32	24)	

Hum level min. Volume 6 MV p/p
Hum level max. volume 15 MV p/p

Heater Current	99)	
Dial lamp current	99)	
Rectifier Input Current	FM 133)	MA AC
	AM 135)	
	GM 135)	
UL84 Cathode Current	FM 47)	
	AM 55)	MA DC
	GM 57)	
Heater winding	161V AC	
Mains Xformer Primary Current	FM 220)	
	AM 220)	MA AC
	GM 220)	

Circuit Ref.	Description	Part No.
	CONDENSERS 20% unless otherwise shown	
C2	12 PF ± ½ PF N750/AD Tub. Cer. Erie.	CN.1722
C3	1000 PF 350V Tub. Cer.	CN.4700
C4	15 PF Trimmer	CV.1127
C5	22 PF ± ½ PF N220/AD Tub. Cer. Erie.	CN.1721
C6	15 PF Trimmer	CV.1127
C7	15 PF Trimmer	CV.1127
C8	22 PF ± ½ PF N220/AD Tub. Cer. Erie.	CN.1721
C9	390 PF 2%	CN.1625
C10	15 PF ± ½ PF N470/AD Tub. Cer. Erie.	CN.4720
C11	33 PF 2½% NPO/BD. Tub. Cer. Erie.	CN.1723
C12	10,000 PF. +50% −25% 350V Tub. Cer.	CN.4732
C13	15 PF ± ½ PF N470/AD. Tub. Cer. Erie.	CN.4720
C14	.004 MFD 400V Hunts.	CN.4860
C15	500 PF 350V Tub. Cer. F.E.C.	CN.1710
C16	.03 MFD −20% +80% 500V. Disc. Cer.	CN.4705
C17	3070 PF 1% 125V. G.E.C. type PF	CN.1741
C18	Tuning gang R.F. Trimmer	Part of CV.1034
C19	Tuning gang R.F. Section	Part of CV.1034
C20	4000 PF 350V Tub. Cer. F.E.C.	CN.1704
C21	220 PF 2% (In T4/T5 Can)	CN.1725
C22	15 PF ± ½ PF N470/AD. (" " ")	CN.4720
C23	220 PF 2% (" " ")	CN.1725
C24	15 PF ± ½ PF N470/AD. (" " ")	CN.4720
C25	2000 PF 350V Tub. Cer. F.E.C.	CN.4496
C26	100 PF 10% 350V F.E.C.	CN.4734
C28	Tuning gang Osc. section	Part of CV.1034
C29	Tuning gang Osc. trimmer	Part of CV.1034
C30	3.5/70 PF Trimmer MT.25/2 Cyldon	CV.1126
C31	430 PF 5% 125V G.E.C. type PF3	CN.1719
C32	.004 MFD. 400V Hunts.	CN.4860
C33	4000 PF 350V. Tub. Cer. F.E.C.	CN.1704
C34	220 PF 2% (In T7/T8 Can)	CN.1725
C35	3.9 PF ±½ PF N470/AD. (" " ")	CN.1726
C36	220 PF 2% (" " ")	CN.1725
C37	47 PF 5% N220 BD. (" " ")	CN.1742
C38	.03 MFD −20% +80% 500V Disc. Cer.	CN.4705
C39	.03 MFD −20% +80% 500V Disc. Cer.	CN.4705
C40	100 PF 10% N750 310K F.E.C.	CN.5005
C41	100 PF 10% 350V F.E.C.	CN.4734
C42	100 PF 10% 350V F.E.C.	CN.4734
C43	500 PF 350V Tub. Cer. F.E.C.	CN.1710
C44	500 PF 350V Tub. Cer. F.E.C.	CN.1710
C45	.002 MFD 10% 125V. Polyester	CN.4892
C46	4 MFD 50V Electrolytic	CN.1213
C47	.04 MFD 250V Hunts.	CN.4439
C48	.1 MFD −20% +80% 300V Disc. Cer.	CN.1746
C49	10,000 PF +50% −25% 350V F.E.C. 420 K	CN.4732
C50	8 MFD 350V electrolytic	CN.4030
C51	3300 PF 500V. Disc. Cer.	CN.1755
C52	16 MFD 350V Electro)	
C53	50 MFD 350V Electro)	CN.4047
C54	32 MFD 350V Electro)	
C55	100 MFD 25V electrolytic	CN.4107
C57	4000 PF 350V Tub. Cer. F.E.C.	CN.1704
C58	2000 PF 350V Tub. Cer. F.E.C.	CN.4496
C59	2000 PF 350V Tub. Cer. F.E.C.	CN.4496
C60	4000 PF 350V Tub. Cer. F.E.C.	CN.1704
C61	47 PF 10% N750K 310K F.E.C.	CN.4802
	RESISTORS 20% unless otherwise shown	
R2	120 ohms 10% ⅛ watt	RFS.4121
R3	220 ohms 10% ⅛ watt	RFS.4221
R4	1 M ⅛ watt	RF.4105
R5	1 K ⅛ watt	RF.4102
R6	2.2 K ⅛ watt	RF.4222
R7	1.8 M ⅛ watt	RH.4185
R8	33 K ½ watt	RB.6333
R9	18 K Welwyn Metox 2 watt	RE.4818
R10	100 K ¼ watt	RH.7104
R11	47 K ¼ watt	RH.7473
R12	1 K ⅛ watt	RF.4102
R13	22 K ¼ watt	RH.7223
R14	1 K ⅛ watt	RF.4102
R15	33 ohms 10% ¼ watt	RH.7330
R16	100 ohms ⅛ watt	RH.4101
R17	1 M ⅛ watt	RH.4105
R18	2.2 M 10% ¼ watt	RHS.7225
R19	47 K ⅛ watt	RH.4473
R20	100 ohms ⅛ watt	RH.4101
R21	12 K ⅛ watt	RH.4123
R22	500 K Lin. Carbon Trimming Pot.	VR.1041
R23	500 K Log. Pot. with D/P switch. V/C.	VR.1052
R24	220 ohms 10% ¼ watt	RAS.4221
R25	27 K ⅛ watt	RH.4273
R26	6.8 M ⅛ watt	RH.4685
R28	330 K ¼ watt	RH.4334
R29	2.2 K ¼ watt	RH.4222
R30	1 K ⅛ watt	RH.4102
R31	500 K Log. Pot. Tone Control	VR.1053
R32	Varite VA 1010 Mullard	RE.4404
R33	220 ohm Dub. B.T.A.	RE.4930
R34	3.3 K 5% W.W. Erie Type R	RE.4623
R35	270 ohms 5% W.W. Erie Type R	RE.4736
R36	Varite VA 1010 Mullard	RE.4404
R37	220 K ¼ watt	RH.7224
L1	FM RF Inductance	CL.1369
L2	Part of Osc. Inductance	CL.1367
L3	Ferrite Aerial Coil Ass.	CL.1385
T1	FM Aerial/Input transformer	CL.1364
T2	FM Osc. Inductance Assembly	CL.1368
T3	FM I.F. Transformer	CL.1366
T6	M.W. Osc. Inductance Assembly	CL.1361
T4/5	AM/FM I.F. Transformer	CL.1362
T7/8	AM/FM I.F. Transformer	CL.1363
T9	Sound O/P Transformer	TR.1430
T10	Mains Transformer M.286	TR.1215
	Westinghouse Rectifier E.C.I. (Bridge)	GR.4319
	Tuner to Main Panel Co-axial link	WR.4042
	Main Panel Co-axial Link	WR.4043
	14/.0076 P.V.C. screened flex	WR.4016
	Switch 3 position N.S.F.	SW. 1576
	Speaker 8" round 10,000 lines 15 ohms impedance	LS. 1064
	Monarch Autochanger UA16 with TC8H cartridge	MO.1561
	OR Monarch Autochanger UA14 with TC8H cartridge	MO.1563
	TC8H Cartridge with Styli	MO.1331
	Scale, printed. M.286	SC. 1386
	Dial lamp holder	DL.4002
	Dial Bulb 6.3V .115A	DL.1003
	KNOBS	
	Control knob for ferrite aerial	KN.1088
	Control knob, ivory, brass centre	KN.1063
	Control knob, ivory, brass centre with black line	KN.1087



MOD. 286
CHASSIS LAYOUT DIAGRAM FRONT
DRG. No. 3600/963

M.286 AM/FM RADIO ALIGNMENT PROCEDURE

The alignment procedure described below must only be attempted where the necessary equipment is available.

Equipment Required:

1. Calibrated signal generator 100 Kc/s – 2 Mc/s A.M. modulated.
2. Calibrated signal generator 10 Mc/s – 100 Mc/s AM/FM modulated.
3. Hexagonal trimming tool.
4. Insulated screwdriver trimming tool.
5. Output meter (Avo meter on .1 amp AC range suitable).
6. Valve voltmeter.

I.F. Alignment A.M. (470 Kc/s):

Alignment must be done in the following order:–

1. Unscrew all cores on transformers T3, T4, T5, T6, T7 and T8 until flush.
2. Set wavechange switch to MW.
3. Set gang to fully meshed position.
4. Inject a 470 Kc/s modulated signal to pin 2 of the UCH.81.
5. Using the hexagonal trimming tool, adjust cores for maximum reading on the output meter in the following order:–

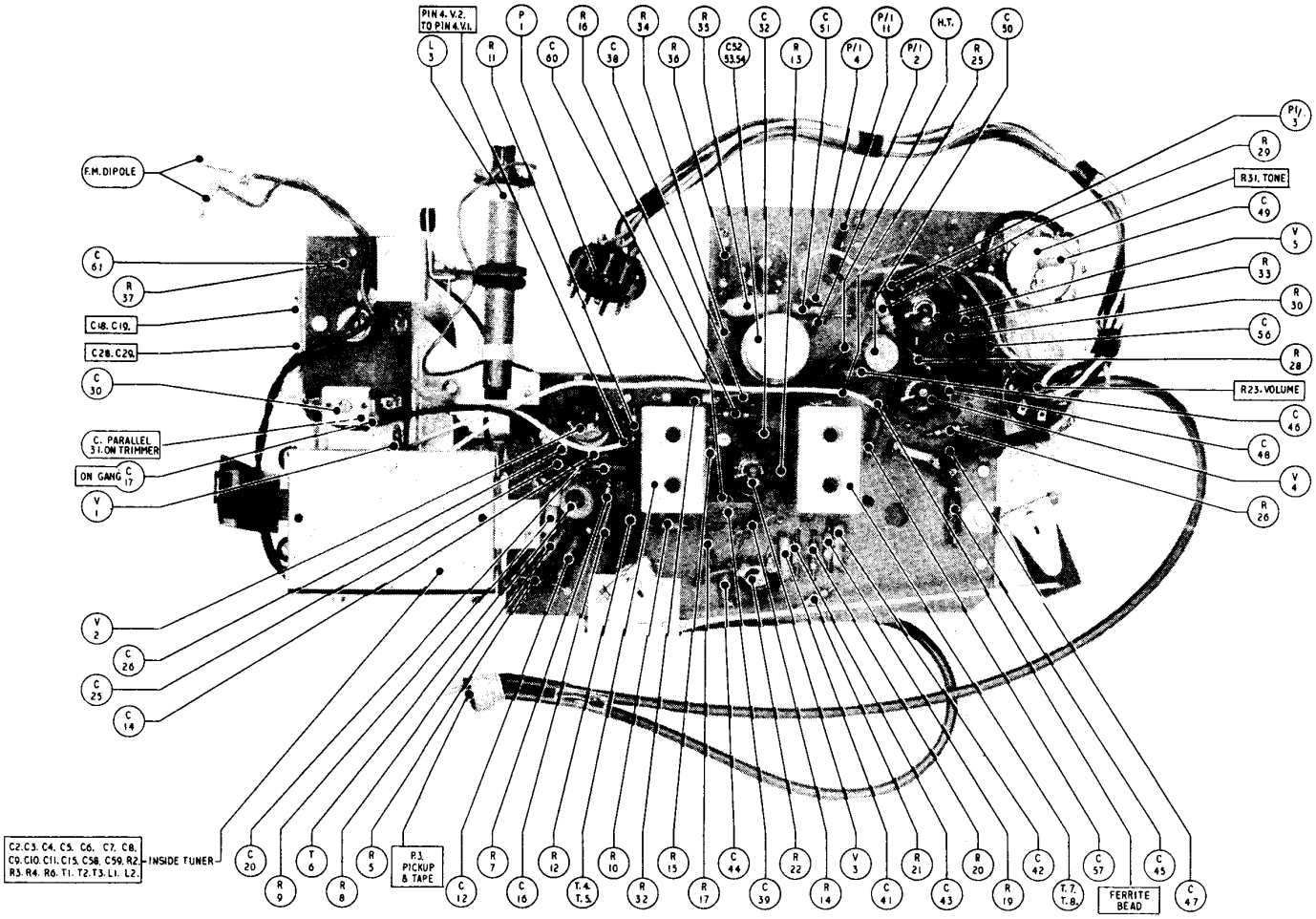
   (1) Bottom core of T7 (secondary)
   (2) Top core of T7 (primary)
   (3) Top core of T4 (secondary)
   (4) Bottom core of T4 (primary)

Maintain volume control at maximum, reducing the generator output as circuits come into line, to prevent AGC circuit operating.

Repeat operations 1 to 4 at least once.

Medium Wave Calibration:

With wavechange switch in MW position, set pointer to the dot at the extreme right-hand end of the MW scale, when the gang is fully meshed.



MOD. 286.
CHASSIS LAYOUT DIAGRAM REAR
DRG. No. 3599/963

Turn pointer to 500 metres, inject a 600 Kc/s signal using coupling loop set approximately 4" behind and in line with the ferrite rod aerial.

Tune in the 600 Kc/s signal with the core of T6 for maximum output. Turn pointer to 200 metres and inject a 1500 Kc/s signal. Tune C25 and C15 for maximum output. Repeat both operations until no improvement can be obtained.

Long Wave

With wavechange switch still in medium wave position, turn gang to fully open position (minimum capacity). Inject 200 Kc/s and adjust C27 for maximum output. If the Light programme interferes with this adjustment, then the station can be used in place of the generator.

This completes the A.M. alignment.

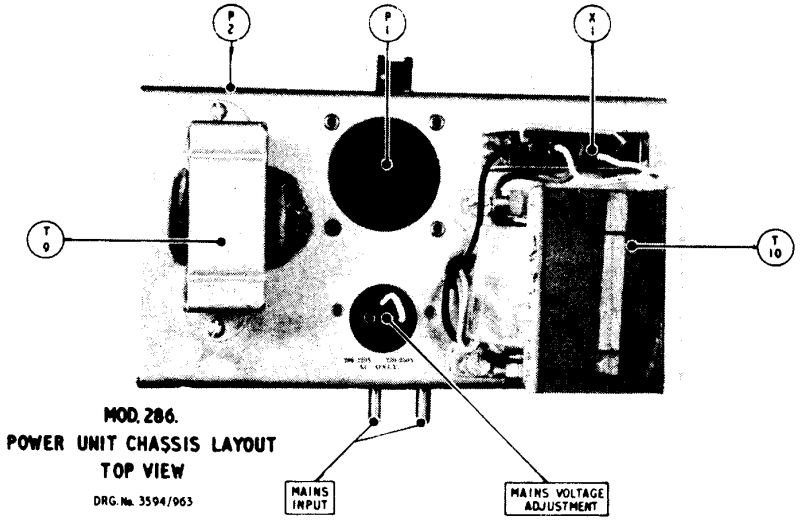
F.M. Alignment

I.F. Stages

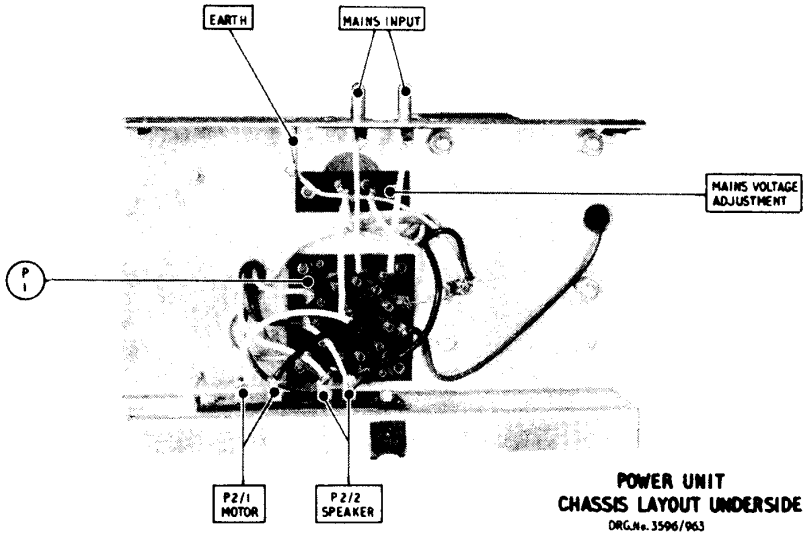
Set wavechange switch to F.M. position.
Volume control at maximum.
Connect signal generator, which should be terminated with an 80 ohm resistor, to the grid of the UCH.81 (pin 2).
Set generator to 10.7 Mc/s modulated AM.
Connect meter across R25, C46.
Adjust the cores in the following order, using hexagonal trimming tool, for maximum reading on meter: –

1. Top core of T8
2. Bottom core of T5
3. Top core of T5
4. Bottom core of T8 for minimum audio output
5. Transfer signal generator to aerial socket. Still using 10.7 Mc/s AM modulated signal, adjust primary of T3 and then secondary T3 for maximum reading on meter.

Repeat adjustments 1, 2, 3, 4 and 5 again with generator still connected to aerial socket.



MOD. 286.
POWER UNIT CHASSIS LAYOUT
TOP VIEW
DRG. No. 3594/963



POWER UNIT
CHASSIS LAYOUT UNDERSIDE
DRG.No. 3596/963

The output of the generator should be adjusted so that the voltage reading on the meter reads approximately 3 volts.

This completes F.M. I.F. alignment.

F.M. Tuner

Turn all trimmers to minimum capacity.
Turn pointer to extreme right hand side of the dial.
Adjust the cores of L1 and T2 so that the bottom ends of the cores are $\frac{3}{8}$" from the printed side of the tuner panel. This measurement is done through the small holes in the panel.
Turn the pointer to 88 Mc/s, inject an 88 Mc/s F.M. modulated signal, tune in the signal with C7.
Connect the valve volt meter (3V range) to the junction of C5 C8, adjust C6 for minimum reading.
Disconnect the meter and:–

1. Re-adjust C7 for output at 88 Mc/s. Adjustment of C6 alters C7. Turn pointer to 100 Mc/s. Inject 100 Mc/s signal.
2. Adjust coil L2 by opening or closing the turns until the signal is tuned in.
3. Turn pointer to 94 Mc/s. Adjust C4 for maximum output.

Repeat operations 1, 2 and 3 until no further improvements can be obtained.

This completes F.M. alignment.

Adjustment of Tuning Cores T2 and L1:

Should the pointer not coincide with the 94 Mc/s mark on the dial, adjust the core of T2 and L1 as follows:–

When the pointer is to the left of the mark, screw the cores anti-clockwise two turns, or clockwise by the same amount if the pointer is to the right of the mark. When a large amount of pointer movement is required to tune the 88 Mc/s signal, it shows that the cores need turning anti-clockwise and vica versa at the 100 Mc/s point.

Repeat operations 1, 2 and 3 above.

TECHNICAL INFORMATION SHEET

No. 41

BAIRD T.V. DISTRIBUTORS LIMITED

RADIO SERIES 260 286 No. 3 1 DATE Feb. 1964.

Increased Life for Pilot Lamps.

To increase the life of pilot lamps in Models 260 and 286 Auto Radiograms, a 2.2 K.ohm resistor has been added in production, connected in parallel with the surge limiting Varite R36.

When replacing a Pilot Lamp or servicing a 260/286 receiver a check should be made to see if the Varite shunt resistor is fitted. If not it should be added.

Component required, 1 2.2 K.ohm Metox Welwyn Resistor
Part No. RE.4948.

Circuit Diagrams.

The additional resistor should be drawn in across R36 on M.260 and M.286 circuit diagrams.

M.260 Alteration to Tone Control Circuit.

Model 260 Auto Radiograms produced after September 1963 have the tone control circuit changed from that shown on the M.260 Circuit Diagram (as Fig. 1 below) to the circuit shown in Fig. 2 below. Figure 2 should be drawn on circuit diagrams as an alternative arrangement.

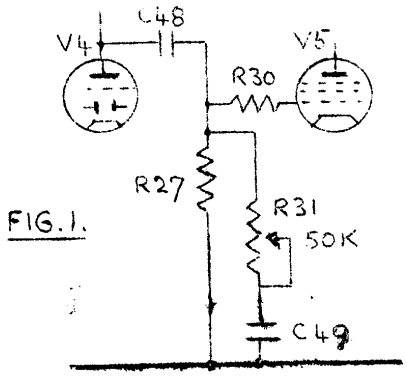


FIG. 1.

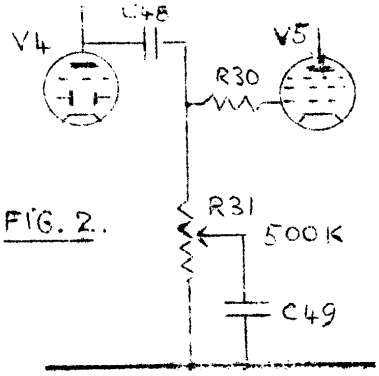


FIG. 2.

Note that R31 is changed from 50K to 500K and that R27 is omitted in the later circuit.